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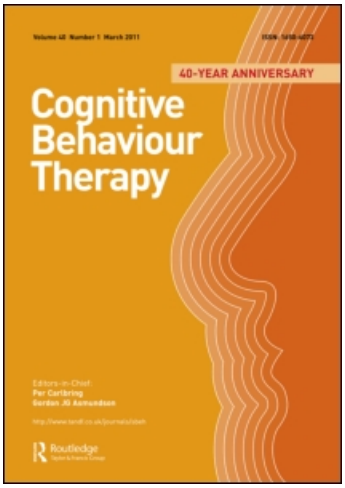

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All at Once or One at a Time? A Randomized Controlled Trial Comparing Two Ways to Deliver Bibliotherapy for Panic Disorder

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All at Once or One at a Time? A Randomized Controlled Trial Comparing Two Ways to Deliver Bibliotherapy for Panic Disorder

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Abstract. Bibliotherapy is potentially effective in the treatment of panic disorder (PD). A still unanswered question is whether pacing is important. This study was designed to test whether there is a difference between being assigned a full book as therapy and receiving one individual chapter every week (i.e. pacing). A total of 28 participants were randomized to either 10 paced chapters or one book with 10 chapters. To maximize compliance, short weekly telephone calls were added in both conditions ($M = 17.8$ min, $SD = 4.2$). Both treatments showed promising results, with effects maintained up to 2 years and with within-group effect sizes (Cohen's *d*) between 0.95 and 1.11. Pretreatment ratings of credibility were positively correlated with the change scores at both posttest and 2-year follow-up for three panic measures. Pacing of text material in bibliotherapy for PD is not needed, and all material can be provided at once when the treatment is guided by a therapist.
Key words: panic disorder; self-help-techniques; bibliotherapy.

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Panic disorder (PD) with or without agoraphobia is associated with substantial impairment in quality of life (Taylor, 2006) and is fairly prevalent (Carlbring, Gustafsson, Ekselius, & Andersson, 2002). As evident from a recent review (Schmidt & Keough, 2010), there are many forms of effective psychological treatments, ranging from relatively therapist-intensive and time-consuming psychoanalytic psychotherapy (Milrod et al., 2007) to recently developed Internet-based treatments (Andersson, 2009). Another treatment format that has been extensively used and researched is *bibliotherapy,* or the use of written instructional materials, often in the form of a self-help book or manual, to guide the patient through the course of treatment (Watkins & Clum, 2008). Bibliotherapy is probably not sufficient for individuals with severe PD and comorbidity and can also be unsuitable for those with limited reading abilities or lack of motivation to follow a self-directed program (Andersson & Carlbring, 2011). However, several studies suggest that bibliotherapy supplemented with telephone calls can be effective. Indeed, research has shown that guided self-help using a book can have good effects (Gould & Clum, 1993; Lidren et al., 1994) and that it can be as effective as face-to-face psychotherapy (Cuijpers, Donker, van Straten, & Andersson, 2010). However, the evidence regarding the effects of pure self-help is not conclusive (Febbraro, Clum, Roodman, & Wright, 1999), although it may be that giving a clear deadline may be enough to obtain good effects

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(Norden, Carlbring, Cuijpers, & Andersson, 2010). A still unanswered question is whether pacing is important. Many effective Internet-based treatments utilize pacing; that is, in order to move from one treatment module to the next, homework assignments need to be sent in and personal feedback given before access to the next module is provided (Andersson et al., 2008). This is different from regular self-help books in which the reader can skip ahead or even start reading from the back (Watkins & Clum, 2008). The current randomized controlled trial was designed to test whether there is a difference in effectiveness among patients assigned a full book with 10 chapters at one single point in time and those receiving one individual chapter every week for 10 weeks (e.g. pacing). To maximize compliance, weekly telephone calls were added in both conditions. Although we expected both ways of delivering treatment to be effective, and hence designed the study as a noninferiority trial, we still expected the paced format to be more effective but with a small effect size. Because we could not power the study for a small effect, the study should be regarded as exploratory. In addition to the immediate treatment effects, we also collected 2-year follow-up data.

Method

Recruitment and selection

A total of 30 participants were recruited from the general public by advertisement. This was part of a larger trial (Carlbring et al., 2006), and this report was based on the treatment effects of the control group not earlier reported. Two participants were excluded because they started other treatments during the 10-week pretreatment baseline period. The remaining 28 were randomized, by a third party independent of the investigators, to either 10 paced chapters ($n = 15$) or one book with 10 chapters ($n = 13$). The participants were selected via a computerized screening interview (Carlbring, Westling, Ljungstrand, Ekselius, & Andersson, 2001) consisting of the self-rated version of the Montgomery–Åsberg Depression Rating Scale (MADRS-S; Svanborg & Asberg, 1994) and 53 additional questions derived from the PD sections of the Composite International Diagnostic Interview (version 2.1; Kessler, Andrews, Mroczek, Ustun, & Wittchen, 1998), the Anxiety Disorders Interview Schedule for DSM–IV (Di Nardo, Brown, & Barlow, 1994), and the Social Phobia section from the Structured Clinical Interview for DSM-IV Axis I Disorders research version (SCID-I; First, Gibbon, Spitzer, & Williams, 1997). To be included in the study, the participants had to meet the following criteria: fulfill *Diagnostic and Statistical Manual of Mental Disorders* (fourth edition, text revision) criteria for PD (American Psychiatric Association, 2000), have a duration of PD of at least 1 year, and be between 18 and 60 years of age. The participant must not suffer from any other psychiatric disorder in immediate need of treatment, and although comorbidity was allowed, PD had to be the primary diagnosis. Participants were required to have a total MADRS-S (Svanborg & Åsberg, 1994) depression score of less than 21 points and a score of less than 4 points on the question targeting suicidal ideation (Item 9). If participants were taking prescribed psychotropic medicine, (1) the dosage had to be constant for 3 months before commencing treatment and (2) participants had to agree to keep the dosage constant throughout the study. If participants were already in psychotherapy, the contact must have lasted at least 6 months and not be based on cognitive behaviour therapy (CBT). Finally, to rule out general medical conditions, participants were required to have consulted a physician before beginning the trial.

These inclusion criteria, except for the depression point total, are common in treatment studies for PD (Öst & Westling, 1995). The reason for adding the criterion of a limit on the depression point total was to reduce any risk of including participants in need of depression treatment more so than PD. An SCID-I interview (First et al., 1997) was administered over the telephone to confirm the diagnosis of all participants who fulfilled all the inclusion criteria according to the initial computerized interview. This has been done with valid results in previous studies (Crippa et al., 2008; Rhode, Lewinsohn, & Seeley, 1997).

The study protocol was approved by the Ethics Committee at Uppsala University in Sweden. Written informed consent was

obtained from all participants after the procedures had been fully explained.

Measures

A set of valid and commonly used questionnaires was administered at four points during the study: pretreatment 1, pretreatment 2 (10 weeks later), posttreatment, and 2-year follow-up. Cognitions were assessed with the Agoraphobic Cognitions Questionnaire (Chambless, Caputo, Bright, & Gallagher, 1984). The Body Sensations Questionnaire (Chambless et al., 1984) was used to measure physiological sensations experienced by patients with anxiety disorders. The degree of agoraphobia was measured with the two-part Mobility Inventory for Agoraphobia (Chambless, Caputo, Jasin, Gracely, & Williams, 1985), in which the patient rates the degree of avoidance (1) when alone and (2) when accompanied by a trusted person. Generalized anxiety was assessed with the Beck Anxiety Inventory (BAI; Beck, Epstein, Brown, & Steer, 1988). Level of depression was measured with the Beck Depression Inventory–II (BDI-II; Beck, Steer, & Brown, 1996). Quality of life was measured with the Quality of Life Inventory (QOLI; Frisch, Cornell, Villanueva, & Retzlaff, 1992). All outcome measures had adequate psychometric properties and were administered via the Internet (Carlbring et al., 2007). In addition to the outcome measures, we administered the five-item Treatment Credibility Scale (Borkovec & Nau, 1972) at pretreatment 1.

Participants

Table 1 presents participants' demographic data: age, marital status, educational level, current medication, treatment, and whether they had a reduced work capacity that entitled them to sick pay or sickness benefit.

Treatment

The text material was based on standard CBT principles divided into 10 chapters: psychoeducation, cognitive restructuring (part 1), hyperventilation test and breathing retraining, cognitive restructuring (parts 2 and 3), interoceptive exposure (parts 1 and 2), in vivo exposure (parts 1 and 2), and relapse prevention (Carlbring & Hanell, 2007). Participants

Table 1. *Participants' demographic data*[a]

Variable	Chapters ($n = 15$)	Full book ($n = 13$)
Gender		
Female	10 (66.7%)	8 (61.5%)
Male	5 (33.3%)	5 (38.5%)
Age (years)		
M (*SD*)	34.3 (7.3)	38.7 (9.2)
Range	27–48	25–66
Marital status		
Married/living together	13 (86.7)	10 (76.9%)
With children	8 (53.3%)	10 (76.9%)
Education level		
Secondary school, not completed	1 (6.7%)	0 (0.0%)
Vocational school, completed	2 (13.3%)	0 (0.0%)
Secondary school, completed	4 (26.7%)	5 (38.5%)
College/university, not completed	2 (13.3%)	2 (15.4%)
College/university, completed	6 (40.0%)	6 (46.2%)
Reduced work capacity		
Full-time sickness benefit	3 (20.0%)	2 (15.4%)
Part-time sickness benefit	1 (6.7%)	0 (0.0%)
Full work capacity	11 (73.3%)	11 (84.6%)
Treatment history		
Sought help before	19 (59.4%)	17 (53.1%)
Earlier psychological treatment	5 (15.6%)	5 (15.6%)
Medication: stabilized psychotropic drugs	7 (46.6%)	6 (46.2%)

[a] *No significant differences existed between the groups according to chi-square and* t *tests.*

received either the full book at the start of the treatment or one module per week during the 10 weeks. In addition to the written material, all participants received one telephone call per week by the same therapist, each lasting, on average, 17.8 min ($SD = 4.2$). The median total telephone time was 188 min. Two clinical psychology master's of science students who had completed their clinical training and were in their last term served as therapists and were randomly assigned to participants. Each therapist was responsible for 14 participants.

Statistical analyses and design

We used a repeated measures design with two baseline measures separated by 10 weeks, one posttreatment, and 2-year follow-up. Independent *t* tests and chi-square analysis were used to show that randomization had resulted in a balanced distribution across both conditions. However, not all randomized participants provided complete data sets. The response rate on the self-report questionnaires was 100% ($n = 28$) at pretreatment 1, pretreatment 2, and posttest. However, at the 2-year follow-up, one participant in the full-book condition failed to complete the measures, making the corresponding Figure 96.4%. In order to handle missing data according to an intention-to-treat principle, we used a mixed-models approach with an unstructured covariance structure (Gueorguieva & Krystal, 2004) instead of analysis of variance and the last observation carried forward. Effect sizes (Cohen's *d*) were calculated with the estimated means from the mixed model and by the following formula for converting standard error to standard deviation: $SD = SE *$ square root (n).

3. Results

As evident from Table 2, there were no significant differences between the two groups at pretreatment 1, $ts(26) = 0.6–1.4$, $ps = .16–.95$, or between pretreatment 1 and pretreatment 2, $ts(26) = 0.4–1.8$, $ps = .09–.97$. Using mixed-effects models, all measures showed a significant treatment effect over time from pretreatment 2 to posttreatment, and the treatment gains were maintained at 2-year follow-up. See Table 2 for scores, *F* values, and *p* values. There were no interactions between time and the two active treatment conditions, suggesting that pacing was not important. This was also supported by the small between-group mean effect sizes (Cohen's *d*) across measures, which were −0.19 at posttest and 0.11 at 2-year follow-up, with negative signs indicating superiority of the paced chapters condition. The within-group mean effect sizes (Cohen's *d*) for the full book and paced chapters were 0.95 and 1.11 (pretreatment 2 vs. posttest) and 1.11 and 1.11 (pretreatment 2 vs. 2 year follow-up), respectively. One month after treatment termination, a clinical telephone interview, administered by two independent research assistants who were blind to treatment condition, was used to determine whether each participant still fulfilled the criteria for PD. A total of 11 participants (73%) in the full-book condition and 10 in the individual-chapters condition (77%) no longer met the criteria for PD, $\chi^2(1, N = 28) = 0.05$, $p = .83$.

The credibility of the treatment was rated at a mean of 36.6 ($SD = 8.0$) for the paced individual-chapters condition and 34.9 ($SD = 7.5$) for the full book using the Borkovec and Nau Scale (NS). The credibility score at pretreatment 2 was positively correlated with the change scores at both posttest and 2-year follow-up on the Body Sensations Questionnaire, $r(28) = .36$, $p = .031$, and $r(27) = .39$, $p = .022$, respectively, the Agoraphobic Cognitions Questionnaire, $r(28) = .39$, $p = .021$, and $r(27) = .41$, $p = .018$, respectively, and the Alone subscale of the Mobility Inventory for Agoraphobia, $r(28) = .35$, $p = .036$, and $r(27) = .35$, $p = .036$, respectively. However, no significant correlations were found on the Together subscale of Mobility Inventory for Agoraphobia, BAI, BDI, QOLI, or MADRS-S ($rs > .02$, $ps < .45$).

When asked retrospectively at posttreatment about how much time each participant had spent on the treatment, the mean time reported was 5.9 hr/week ($SD = 5.3$). Finally, before commencing the treatment, each participant was asked to value how much he or she thought that this treatment was worth. The average amount, using the currency of Sweden (SEK), was 3153 SEK ($SD = 3545$). At posttreatment the figure increased to 9012 SEK ($SD = 12{,}028$).

At pretreatment, seven (46.6%) of the patients in the paced condition and six (46.2%) of the those in the full-book condition

Table 2. *Estimated means (+ SD), main and interaction effects, significant pairwise comparisons from the mixed-effects model for each group on the self-report instruments at the two pretreatment measurements as well as at posttreatment and 2-year follow-up*

	Chapters		Full book		
Measure	*M*	*SD*	*M*	*SD*	Mixed-effect model (*F*)
Body Sensations Questionnaire					
Pre 1	50.4	10.6	50.6	7.2	T: 46.4**
Pre 2	51.4	11.2	47.3	8.4	G: 0.1
Post	30.8	7.9	32.5	9.5	I: 0.7
2-yr FU	30.2	10.9	29.5	7.9	pre 1 = pre 2 > post = 2-yr FU
Agoraphobic Cognitions Questionnaire					
Pre 1	33.3	8.0	38.3	12.2	T: 17.3**
Pre 2	32.3	7.7	35.9	12.7	G: 1.4
Post	21.9	5.4	23.7	8.1	I: 0.4
2-yr FU	20.6	6.8	21.0	5.4	pre 1 = pre 2 > post = 2-yr FU
Mobility Inventory for Agoraphobia–Alone					
Pre 1	3.0	0.7	2.8	1.1	T: 17.0**
Pre 2	3.0	0.8	2.8	1.0	G: 0.5
Post	2.2	0.9	2.0	0.8	I: 0.2
2-yr FU	2.1	0.8	1.9	0.7	pre 1 = pre 2 > post = 2-yr FU
Mobility Inventory for Agoraphobia–Accompanied					
Pre 1	2.3	0.8	2.4	0.8	T: 14.9**
Pre 2	2.3	0.9	2.3	0.8	G: 0.0
Post	1.7	0.9	1.9	0.7	I: 0.3
2-yr FU	1.7	0.7	1.6	0.6	pre 1 = pre 2 > post = 2-yr FU
Beck Anxiety Inventory					
Pre 1	17.4	8.4	22.5	10.3	T: 27.1**
Pre 2	19.9	8.8	19.7	12.0	G: 1.6
Post	3.3	4.4	7.4	5.9	I: 1.2
2-yr FU	5.7	4.0	7.1	5.0	pre 1 = pre 2 > post = 2-yr FU
Beck Depression Inventory–II					
Pre 1	13.7	7.0	17.8	7.9	T: 14.0**
Pre 2	12.0	8.0	16.3	10.2	G: 1.1
Post	8.7	7.2	8.2	4.9	I: 1.1
2-yr FU	6.1	5.7	6.8	5.4	pre 1 = pre 2 > post = 2-yr FU
Quality of Life Inventory[a]					
Pre 1	1.42	1.43	1.00	1.59	T: 5.9*
Pre 2	1.48	1.31	0.84	1.90	G: 0.0
Post	2.44	1.48	2.28	2.31	I: 1.3
2-yr FU	2.13	1.87	3.01	1.40	pre 1 = pre 2 > post = 2-yr FU
Montgomery–Åsberg Depression Rating Scale–self-rated					
Pre 1	13.9	6.4	16.0	6.0	T: 22.7**
Pre 2	12.7	7.0	14.9	6.4	G: 0.4
Post	5.3	4.5	6.3	4.3	I: 0.8
2-yr FU	7.5	6.0	5.5	5.1	pre 1 = pre 2 > post = 2-yr FU

*$p < .01$. **$p < .001$. *T, main effect of Time; G, main effect of Group; I, interaction Time × Group.*
[a] *Higher scores indicated higher quality of life.*

took antidepressant medication on a regular basis. None of the patients increased the dosages of their medication. At posttreatment and at the 2-year follow-up, only four (26.7%) of the patients in the paced condition and four (30.7%) in the full-book condition continued to take their drugs. This difference was not significant.

Discussion

This study was designed to test whether pacing had any clinically relevant effects on the outcome of guided self-help for PD. The data from this trial did not indicate a significant difference between assigning a patient a full book all at once or sending individual chapters each week. Both alternatives showed good results, both immediately after treatment and at 2-year follow-up. With the Internet, it became possible to easily give patients access to text modules (chapters) gradually, and this is also the approach we have used in several trials on PD (Carlbring et al., 2001) and other anxiety disorders (Andersson, Bergstrom, Carlbring, & Lindefors, 2005).. However, with bibliotherapy it is also possible to provide patients with chapters gradually and based on progress. To our knowledge, this is one of the first studies in which pacing of chapters has been tested. It may be that the principles of CBT for PD are well known and that the rationale and psychoeducation given early in treatment prepares the patient for what is coming up. Hence, the exposures that appear in later chapters are expected, and it may make little difference to have a glance at these chapters early on. Pacing of chapters in guided self-help could be more important in the treatment of other conditions such as depression and specific phobia. In the case of depression, seeing that the treatment will require hard work may act as a demotivator, and in the case of exposure treatment for specific phobia (Andersson et al., 2009) patients may be scared if they know too much in advance where the treatment may lead them. We assume that the role of pacing in the treatment of PD may not be the same as in self-help treatment of other conditions. Because there is good empirical support for guided self-help for anxiety disorders (Cuijpers & Schuurmans, 2007), this question merits further research, in particular as pacing may also involve treatment dose. In other words, some patients may need more or fewer chapters, and the tailoring part of the treatment may be easier when the treatment is paced than if all material is presented at once (which can include chapters that may be irrelevant).

One interesting finding in this study was that the amount of money participants were willing to pay for the treatment increased after the treatment ended. This observation was not a central aim of investigation but may reflect attitudes toward guided self-help, in particular that patients' expectations of what can be achieved from self-help can be too low. Once the treatment has been completed, attitudes become more positive and willingness to pay increases. It also implies that patient information is important in order to convey realistic expectations (Rogers, Oliver, Bower, Lovell, & Richards, 2004).

Several limitations hamper generalization of the results. First, the study was underpowered for finding small effects. Indeed, the effect sizes at posttreatment favoured the paced condition, but this minor advantage was not seen at follow-up. Given the small sample size, the between- and within-group effects cannot be regarded as reliable indicators of differences, and it cannot be assumed that a larger sample would have led to a statistically significant difference in favour of the paced condition (Sohlberg & Andersson, 2005). Second, the fact that both groups also received substantial telephone support also makes generalizations more complicated. Indeed, it could be argued that pacing is of considerable importance, but that the participants were called once every week clouded the true comparison. Participants randomized to receiving the full book were reminded by the telephone calls to work with the material every week. Furthermore, if participants in the full-book condition had skipped ahead and read about frightening exposure tasks in the later chapters, making them anxious, their therapist could calm the participants by saying things like "You will be ready for this when you reach that level." Contrarily, participants in the paced condition might have got frustrated by not knowing what would be expected from them in a couple of weeks. Again, the therapist providing telephone follow-up might have cancelled out any true difference by providing some information. Hence, we can conclude that if therapist support is provided there does not seem to be any difference in whether the full book is provided or not. However, to truly test whether pacing is important, pure bibliotherapy should be used and evaluated. Interestingly, and again supporting the null hypothesis, when the participants were asked which mode of delivery they favoured,

a majority preferred the one to which they had been randomized: 77% of participants randomized to the full-book condition favored that form, and 85% of those in the individual-chapters condition preferred this form.

Another potential caveat is that this study mostly relied on self-report questionnaires as outcome measures. Although the validity of these well-established questionnaires is good, the study would have benefitted from more rigorous clinical judgments. It is true that a clinical interview was conducted one month posttreatment. However, this should also have been done at the 2-year follow-up to further strengthen the results.

In comparison with a previous study of Internet therapy targeting the same population (Carlbring et al., 2005), the present treatment credibility rating was slightly higher than for Internet therapy ($M = 33.8$) but lower than standard face-to-face therapy ($M = 40.6$). Interestingly, this study showed significant correlations between pretreatment scores on the treatment credibility scale and later outcome. Indeed, not all measures had a significant correlation, but the panic scales Body Sensations Questionnaire, Agoraphobic Cognitions Questionnaire, and the Alone subscale of the Mobility Inventory for Agoraphobia did show promise as they add to the literature showing that outcome can be predicted in low-intensity CBT (Carlbring et al., 2006)..

We conclude that pacing of text material in bibliotherapy for PD is not needed and that all material can be provided at once when the treatment is guided by a therapist.

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